ensure that collocation disputes can be resolved promptly. Finally, consistent with the comments of other competitive carriers, AT&T urges the Commission to ensure that incumbent LECs engage in nondiscriminatory network planning for future network changes, and that such changes accommodate competitors' unique needs in a nondiscriminatory manner.

I. THE COMMENTS OVERWHELMINGLY CONFIRM THAT THE COMMISSION SHOULD ADOPT NATIONAL RULES UNDER SECTION 251(c)(6) THAT ALLOW COMPETITIVE LECS TO COLLOCATE EQUIPMENT THAT PERFORMS TRANSMISSION, SWITCHING AND SURVEILLANCE FUNCTIONS.

Almost all of the commenters – including one of the largest incumbent LECs (Qwest) – overwhelmingly agree that the Commission should adopt national rules to assure that competitive LECs can collocate transmission and switching functionality. As most of the commenters recognize, the D.C. Circuit did *not* preclude the Commission from adopting rules on remand requiring collocation of such functionality. Rather, it held only that the Commission was required to give a better explanation for such rules. Moreover, the commenters demonstrate that the standard in Section 251(c)(6) is sufficiently broad to encompass collocation of transmission and switching functionalities, including "transmission equipment, [such as] multiplexers; ATM switches; DSLAMs; routers and concentrators; frame relay switches; and Ethernet switches." Qwest at 4.

The only dissenters are three of the incumbent LECs and USTA. They assert that the D.C. Circuit's decision precludes the Commission on remand from requiring incumbents to permit collocation of whole categories of equipment, especially so-called "multifunctional" equipment, but their positions are based on a misreading of the D.C. Circuit's opinion. Moreover, these incumbents have provided no evidence to refute the commenters' extensive factual showings that transmission and switching functionalities are in fact "necessary" for

interconnection or to obtain access to unbundled network elements, or that the inability to collocate such functions would be discriminatory.

A. The Comments Clearly Demonstrate That The D.C. Circuit Did Not Foreclose The Commission From Adopting National Rules Requiring Incumbents To Permit Collocation Of Transmission, Switching and Surveillance Functionality.

Virtually all of the commenters, including Qwest, recognize that the D.C. Circuit did not preclude the Commission from readopting rules requiring incumbent LECs to permit collocation of transmission, switching and surveillance functionalities.[1] To the contrary, these commenters support AT&T's demonstration that the Court held merely that the Commission's original interpretation of the statutory term "necessary" was "impermissibly broad," and as a result the Commission had not adequately explained why incumbents were required to collocate equipment that performs such functions. *GTE Service Corp.* v. *FCC*, 205 F.3d 416, 422-24 (D.C. Cir. 2000). Although some incumbent LECs argue that the D.C. Circuit in fact barred the Commission from requiring collocation of certain types of equipment, particularly so-called

[1] *See* Qwest at 4-6; Covad at 12-13 ("[T]he court made clear that the Commission's task was not to rewrite the substance of the collocation rules" but "rather to better explain [their] basis"); Covad at 17 ("[T]he Court did not state that multi-functional equipment could not be allowed"); Cisco at 3 (The "Court invited the Commission to refine its collocation requirements on remand by adopting a formulation that falls within the limits of the 'ordinary and fair meaning' of section 251(c)(6)"); CompTel at 8 ("Commission is not precluded from re-adopting its previous rule if it provides a 'better explanation' as to why that rule makes sense in light of the statutory language and structure."); Focal at 2 (The "court did not dispute the underlying premise of those rules," but "[I]nstead, the Court requested the Commission to provide further analysis and rationale"); Corecomm at 5 ("[T]he court did *not* adopt such a restrictive definition of the word 'necessary,' nor did it require the FCC to do so on remand."); Tachion at 6 ("[C]onstruing the Court of Appeals order to eliminate all but minimal collocation is overreaching and beyond a fair reading of either the Court of Appeals" decision or other relevant precedent.").

"multi-use" equipment, their claim is based on a misreading of both the Act and the Court's opinion.[2]

The Commission originally interpreted the term "necessary" in Section 251(c)(6) to mean "used or useful." *See Local Competition Order* at ¶¶ 579-82 (adopting 47 C.F.R. § 51.323(b)).[3] The D.C. Circuit, however, held that this interpretation of "necessary" was "impermissibly broad." *GTE Service Corp.*, 205 F.3d at 424. Specifically, the Court held that "the Collocation Order *as presently written* seems overly broad and disconnected from the statutory purpose enunciated in § 251(c)(6)," because the order as written would potentially require the collocation of *any* functionality, no matter how unrelated to interconnection or access to unbundled network elements. *Id.* at 422 (emphasis added). Critically, however, the Court

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[2] The incumbent LECs' arguments ignore both the language used in the D.C. Circuit's opinion and the clear language of the Act. For example, Verizon contends that the Court held that "cost efficiency *cannot* be a factor in determining whether physical collocation is 'necessary.'" Verizon at 5. This is a clear misreading of the Court's decision and contrary to the nondiscrimination obligation imposed by the Act. In fact, as Verizon tacitly concedes, the Commission must consider economic efficiency as one of the principal indications that certain equipment must "necessarily" be collocated where inefficiencies would prevent competitors from offering a service altogether. *See* Verizon at 4 (conceding that if alternative arrangements are so costly that "the competitor would be unable to offer a commercially viable service" or so "technologically inferior" as to render the service "non-competitive," the "the alternative is effectively unavailable."). Thus, as all parties to these proceedings recognize, the definition of "necessary" cannot be based on some abstract, absolute measure, but is in reality a difficult exercise in economic line-drawing. The real issue is at what point does economic inefficiency of the alternatives render collocation "necessary." The incumbent LECs similarly misconstrue the Court's holding with respect to cross-connects, claiming that the Court "confirmed that the Commission's authority is tightly circumscribed by the [statutory] language." *Verizon* at 3. Again, the incumbents ignore the language of the Act and the decision both. The Court merely stated that the Commission's rule "ha[d] no *apparent* basis in the statute." GTE at 423 (emphasis added). The Court's holding that the need for cross-connects was not obvious or "apparent," and thus required further explanation, clearly does not amount to the affirmative negation or "strict circumscription" of the Commission's authority as the incumbents claim.

[3] In 1999, the Commission further clarified that, under this standard, incumbent LECs were required to permit collocation of DSLAMs, routers, ATM multiplexers, remote switch modules,

offered only two examples of functions that would fall outside of a reasonable interpretation of the term "necessary": "enhancements that might facilitate payroll or data collection features." *Id.* at 424. The Court did *not* question the Commission's authority to order collocation of any specific telecommunications functionalities, such as optical terminating equipment, multiplexers, DSLAMs, routers, ATM multiplexers, packet switches, remote switch modules, or any other equipment that new entrants typically collocate.[4]

Thus, the Court remanded the matter to the Commission for "further consideration," *id.* at 424, simply because the Commission's original interpretation contained no appropriate limiting principle. On any fair reading of the opinion, the Court left it to the Commission to adopt a new, permissible interpretation of the statute on remand.[5] Moreover, the Court did not attempt to prejudge what types of telecommunications equipment might be collocated under the Commission's subsequent review, but rather left it to the Commission to

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and any other multi-functional equipment that was in some way used for interconnection or access to unbundled network elements. *See Collocation Order* ¶¶ 26-31.

[4] *See, e.g.*, RCN at ii ("[T]he court did *not* foreclose the Commission from permitting CLECs to collocate a full range of contemporary telecommunications equipment on ILEC premises."); Covad at 13 ("Th[e] two [Commission] decisions at issue in this proceeding [*i.e.*, that ILEC must allow collocation of multifunction equipment and that ILEC may not limit competitor's ability to use all feature and functions of collocated equipment] not because the D.C. Circuit thought they fell beyond the Commission's authority, nor because the D.C. Circuit thought the substance of those decisions was incorrect."); *see also* Sprint at 7-9 (equipment that Sprint believes can clearly be placed in the 'safe harbor' list includes DLSAMs, Network Management Devices, ATM Multiplexer, Timing Sources, Fiber Optical Terminating Equipment, Cross-connect Equipment, Test Heads, Fuse and Alarm Panels, Splitters, and Line Cards.).

[5] *See, e.g.*, AT&T at 2, 8-9; Cisco at 4 ("Commission's task in this proceeding is to develop an appropriate limiting standard"); Corecomm at 3 ("proceeding is an opportunity for Commission to define the scope of its authority to require collocation and adopt collocation standards coextensive with that authority," as in *UNE Remand* proceeding); Covad at 12-13 (the Court "made it quite clear that it was for the Commission to determine an appropriate interpretation of that statutory language" on remand; "the Commission is simply charged with explaining more clearly how some of these rules relate to the statutory language of the Act").

determine on remand after development of a full record. Indeed, the Court expressly contemplated that the Commission could readopt much of its previous rules on remand as they related to telecommunications equipment performing telecommunications functions. *GTE Service Corp.*, 205 F.3d at 424 (Court emphasized that it did "not mean to vacate the Collocation Order to the extent that it merely requires LECs to provide collocation of competitors' equipment that is directly related to and thus necessary, required, or indispensable to interconnection or access to unbundled network elements," but that "[a]nything beyond this, however, demands a better explanation from the FCC").

For these reasons, the Court did not preclude the Commission from requiring collocation of any particular telecommunications functionality on remand. Therefore, the incumbents' are simply wrong that "any attempt to re-impose the multi-functional equipment collocation requirement . . . would be at odds with both the court's decision and the plain language of section 251(c)(6)." *See, e.g.*, SBC at 8, 11; USTA at 4. In fact, the D.C. Circuit's decision precludes only the readoption of the Commission's original "used and useful" definition.

Further, the Court expressly held that Section 251(c)(6) is ambiguous and subject to multiple interpretations. *GTE Service Corp.*, 205 F.3d at 420-21. Because Section 251(c)(6) has no single "plain meaning," the Court left it to the Commission to fashion a new, permissible interpretation of the statute on remand. As the Court fully recognized (*id.* at 421), such an interpretation may well permit the Commission to require collocation of much (if not all) of the telecommunications functionalities that it had sought to require in the *Collocation Order*, including "multifunctional" equipment. As shown below and in the comments, the Commission has more than ample basis in the statute to require collocation of multifunctional equipment.

B. The Commenters Confirm That The Commission Should Adopt The Three Principles Identified In AT&T's Opening Comments.

The commenters similarly agree with AT&T that the Commission should use this opportunity not only to respond to the D.C. Circuit's concerns regarding its interpretation of the term "necessary," but also to undertake a thorough examination of Section 251(c)(6), in order to assure that its rules clearly establish the full extent of the incumbent LECs' duties under the statute. In its Comments, AT&T demonstrated (at 9-10) that the Commission should recognize here that Section 251(c)(6) encompasses three important principles that define the scope of new entrants' rights to collocate equipment on incumbent LECs' premises. The commenters broadly echo those principles.

First, incumbent LECs' Section 251(c)(6) duties go beyond mere physical connections to the incumbent's network, because the Commission has always defined the statutory terms "interconnection" and "access" to unbundled network elements more broadly. In particular, the Commission held in the *Local Competition Order* that "access" to unbundled network elements requires more than a bare physical connection to an element; it also requires that competitors must have the ability to "use" all of the features, functionalities, and capabilities of the element.[6] Similarly, "interconnection" is defined in the statute as interconnection that is "equal in quality" to that which the incumbent provides to itself. Thus interconnection means more than a mere physical connection.[7]

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[6] *See* Joint Commenters at 32 ("The Commission recognizes that the nondiscrimination requirement is met only if the elements *and the access to those elements* that CLECs receive are of the same quality as the elements and access thereto that *the ILEC itself enjoys.*") (citing the *Local Competition Order* ¶ 312).

[7] 47 U.S.C. § 251(c)(2)(C). *See* Covad at 30 ("Congress clearly intended 'interconnection' as used in section 251(c)(6)" to be read broadly, "[h]ad it intended differently, [Congress] would

Second, although the term "necessary" need not be interpreted this restrictively, at a minimum, the term encompasses situations in which, absent the ability to collocate particular equipment, (i) new entrants would be precluded from providing at least some services to at least some customers through the use of unbundled network elements or interconnection, or (ii) the new entrant could not offer service of the same quality as the incumbent through the use of unbundled network elements or interconnection. Under either of these circumstances, the subject equipment is "necessary" for interconnection and access to unbundled elements under any plausible definition of the term.

Third, Section 251(c)(6) requires that collocation must be available on terms and conditions that are "just, reasonable, and nondiscriminatory." Thus, where equipment has functionalities and capabilities that are necessary for interconnection or access to unbundled network elements, the statute prohibits incumbents from denying collocation of additional telecommunications functionalities in multifunctional equipment that does not consume any appreciable additional space. The only purpose of prohibiting the collocation of such additional functionality would be an anticompetitive one that would necessarily be unjust, unreasonable, and discriminatory.

1. Collocation of Equipment Necessary for "Access" to UNEs and "Interconnection." The incumbents' narrow arguments overlook the fact that Section 251(c)(6) requires incumbents to provide for collocation of equipment that is necessary for "interconnection and access to unbundled network elements." As the commenters recognize, the

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have provided so" as it has done elsewhere); RCN at 15-16 ("[N]othing in the plain meaning of the statute, its procompetitive purpose or its legislative history supports [ILECs'] argument" that "interconnection" was intended to be narrow and limited a term as the ILECs suggest.); *Local Competition Order* ¶ 224.

Commission has always interpreted those two terms broadly to encompass more than mere physical connections. *See, e.g.,* Joint Commenters at 21 ("the inquiry is not whether collocation of a particular type of equipment is necessary to interconnect or access a UNE in some minimalist engineering sense," but rather "to ascertain what equipment in what types of arrangements must requesting carriers, taken as a whole, have the ability to collocate if the statutory purposes of Section 251(c)(2) and 251(c)(3) are to be fulfilled").[8]

First, the Commission held in the *Local Competition Order* that "the term[] 'access' to network elements . . . mean[s] that incumbent LECs must provide the facility or functionality of a particular element to requesting carriers," and "that a telecommunications carrier purchasing access to an unbundled network facility is entitled *to exclusive use* of that feature, function, or capability." *Local Competition Order* at ¶ 268 (emphasis added). Moreover, the Commission's rules entitle competitors to such access in a manner that enables them "to provide *any* telecommunications service that can be offered by means of that network element." 47 C.F.R. § 51.307(c) (emphasis added). In order to "access" an element, a CLEC must therefore be able to "use" all of the capabilities of the element to provide *any* telecommunications service of its choosing. Therefore, as AT&T showed (at 23-24), requesting carriers have the right under the Act to collocate not only equipment that performs the narrow

[8] GSA at 6 (definition of "necessary" previously "adopted for purposes of applying section 251(d)(2)(A) of the [Act], should apply similarly in applying section 251(c)(6) of the same legislation."); GSA at 4 (Commission should "respond to the court's remand by prescribing 'necessary' conditions in a manner that will maximize the opportunities for more competition to develop."); Covad at 14-15 (Commission should "step back and look at the entirety of section 251(c)(6)" to "come up with a workable definition of 'necessary'" that embodies the statutory duty of nondiscrimination and statutory mandate to foster competition.)

functions of termination and interconnection, but also multi-use equipment that is required in order to make *full* use of the element in question.[9]

This is confirmed by the Supreme Court's decision in *AT&T Corp.* v. *Iowa Utilities Board*, 522 U.S. 366 (1999). There the incumbents argued that unbundled network elements "must be [defined as] part of the physical facilities and equipment used to provide local phone service." *See id.* at 368. The Court rejected the incumbents' argument, and expressly held that, for example, software features that are not themselves physical facilities or equipment, including "vertical switching features, such as caller I.D., are 'functions . . . provided by means of' the switch, and thus fall squarely within the statutory definition" of an unbundled network element. *Id.* Just as network elements themselves are not confined to physical facilities, but encompass software-based features and functions and all other "capabilities" of the use of equipment, so too may the equipment "necessary" to obtain "access" to unbundled elements also require the collocation of software and other functions capable of interacting, and using, all of the element's "features, functions, and capabilities."

Second, Section 251(c)(2)(C) expressly requires that the incumbent must provide interconnection that is "at least equal in quality to that provided by the [incumbent LEC] to itself

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[9] *See, e.g.*, Connectiv at 9-10 (in order to access the features and functionalities of unbundled elements, "CLECs must employ equipment that is fully capable of interacting with those features, functions, and capabilities," and "[a]s ILECs continue to employ more advanced electronics in loops and central offices, the range of equipment that CLECs may collocate to access those loops and the related electronics correspondingly increases"); Covad at 27 (Once equipment is shown to be "necessary" it "is clear that the incumbent *cannot* unjustly, unreasonably or discriminatorily restrict the *use* of that equipment"); RCN at 14 ("[T]here is no reason to believe that Congress intended to freeze the term equipment necessary for interconnection at the technology available in 1996," and there is every reason to believe that Congress not only assumed, but intended, CLECs to be allowed to benefit from "rapid[] private sector deployment of advanced [technologies and services]").

or to any subsidiary, affiliate, or any other party to which the carrier provides interconnection." 47 U.S.C. § 251(c)(2)(C); *see also Local Competition Order* ¶ 224 (incumbents must provide "interconnection" that is "equal in quality" to that available to the incumbent itself and that this obligation is "not limited to the quality perceived by end users"). Thus, "equipment necessary for interconnection" is the equipment necessary to achieve interconnection that is equal in quality to that which the incumbent provides to itself or others.[10]

In this regard, the incumbent LECs (except Qwest) simply repeat the same mistake they made in the Court of Appeals. For example, SBC (at 10) states that the Commission may require collocation only where "it can be demonstrated that the equipment is intrinsically required for connection to the ILEC's networks for purposes of interconnection or access to unbundled network elements." *See also* SBC at 11. The incumbents never even address, much less come to grips with, the statutory terms "interconnection" and "access" to UNEs, and the broad definitions the Commission has consistently given those terms. As shown above, those terms encompass far more than physical connections "in some minimalist engineering sense."[11] The incumbents' extraordinarily cramped reading of their obligations

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[10] *See, e.g.,* Corecomm at 13-14 ("[t]he term 'necessary' therefore comprehends the entire scope of the interconnection . . . obligations imposed in Section 251(c)(2)[]," which requires incumbents to provide equal-in-quality interconnection).

[11] Joint Commenters at 4 & 21; *id.* at 11 ("[T]he 1996 Act allowed several forms of interconnection and access, of which physical collocation was only one," and accordingly the Commission has consistently held that "for the procompetitive purposes of the Act to be fulfilled, carriers must be able to . . . take advantage of *each* of them"; *see also* Covad at 30 ("Congress clearly intended 'interconnection' as used in section 251(c)(6)" to be read broadly, "[h]ad it intended differently, [Congress] would have provided so" as it has done elsewhere); GSA at 4 (Commission should "respond to the court's remand by prescribing 'necessary' conditions in a manner that will maximize the opportunities for more competition to develop."); Covad at 14-15 (Commission should "step back and look at the entirety of section 251(c)(6)" to "come up with a workable definition of 'necessary'" that embodies the statutory duty of nondiscrimination and statutory mandate to foster competition.).

under Section 251(c)(6) is therefore directly at odds with the Commission's prior rulings and the Act's broad purpose to promote competition in all telecommunications markets.

2. The Interpretation of the Term "Necessary." The commenters also agree generally that, although the FCC need not interpret Section 251(c)(6) so restrictively, collocation of particular equipment that performs a particular telecommunications functionality is "necessary," at a minimum, if, without the right to collocate such equipment, (1) the cost of providing service would increase to the point that, in a significant number of cases, CLECs would not offer that service through interconnection or UNEs, or (2) CLECs would be unable to offer service through interconnection or UNEs that has the same quality as the incumbent's offering. Such a standard unquestionably would be consistent with the D.C. Circuit's opinion, as well as with the Supreme Court's interpretation of the term "necessary" in Section 251(d) in *Iowa Utils. Bd.* and the Commission's implementation of that provision in the *UNE Remand Order*.[12]

Even the incumbent LECs cannot dispute that such a standard would easily pass muster under Section 251(c)(6) and *GTE Service Corp.* For example, Verizon agrees that the Commission may lawfully require incumbents to provide collocation where it is necessary for the collocator to provide service through interconnection or access to unbundled network elements. Verizon at 4. Indeed, Verizon expressly refers to the standard adopted in the *UNE Remand Order*, and argues (as does AT&T) that collocation is surely "necessary" when "the

[12] *See, e.g.*, Cisco at 6 (Commission "can and should use a similar approach [to *UNE Remand Order*] in defining the term necessary in this proceeding"); GSA at 5-6 (advocating approach similar to *UNE Remand*); WorldCom at 3-5 & 5 n.8 ("WorldCom's [proposed] definition is similar to the definition for 'necessary' set forth by the Commission . . . in the *UNE Remand* Proceeding"); CompTel at 9; Covad at 21.

competitor is unable to offer service without access to [here, the collocation] because no practical, economic, and operational alternative is available, either by self-provisioning or from other sources." Verizon at 4 (quoting *UNE Remand Order* ¶ 44).

Moreover, the "necessary" standard clearly would be met if collocation is required to provide services that are comparable in quality to the incumbents'. Again, even Verizon recognizes that "if the competitor can show that the cost of alternative interconnection arrangements is so significant that the competitor would be unable to offer a commercially viable service, or if it can prove that the alternative is technologically inferior and makes its service non-competitive, then the alternative [to collocation] is effectively unavailable." Verizon at 4; *see also* Qwest at 9 & n.10 ("necessary" standard is satisfied where collocation a carrier's "brings about significant economies necessary to compete" and absent collocation "ability to compete must be materially impaired").

CompTel suggests an alternative means of expressing this limiting principle. *See* CompTel at 4-5. The considerations that are the basis of AT&T's proposed test – the relative costs of serving customers through collocated and non-collocated facilities, and relative quality of services that can be provided – are generally correlated with the relative efficiency of the transmission facilities at issue. As CompTel states (at 4), "[w]ith respect to any particular collocation practice, the Commission should focus on whether it is materially more efficient [in terms of interoffice transmission capacity and efficiency] for a CLEC to engage in that practice within the collocation arrangement, or whether the CLEC suffers no material efficiency losses if it must engage in that practice elsewhere in the network.."[13] Functionalities and practices that

[13] CompTel describes this as "collocation throughput" – the amount of traffic that an individual CLEC routes through its collocation arrangement. *See* CompTel at 2 & n.2. CompTel argues

result in a material increase in the efficiency of interoffice transport (and thus the amount of traffic that can be exchanged between ILEC and CLEC at that central office) would also tend to expand the possible geographic reach of the CLEC, as well as the range of services that the CLEC can provide. Thus, collocation of such functionalities should be deemed "necessary" under Section 251(c)(6). Equally important, this limiting principle would exclude collocation of functions that have no direct bearing on interoffice transport efficiency, such as the "payroll" and "data collection" functions referenced by the Court of Appeals. *See* CompTel at 8.

Finally, SBC, alone among the incumbents, appears to argue that Congress intended the collocation standard to be so strict that it would in many cases preclude the use of equipment necessary to provide a competitive service.[14] Congress, however, clearly did not intend for the Commission to interpret Section 251(c)(6) in a manner that would defeat the purposes of Section 251 as a whole. Although it is true that the Commission must not blind itself to the statutory term "necessary" in the name of efficiency (*see* SBC at 11), SBC's proposed standards would require the Commission to blind itself not only to efficiency but to necessity itself. If, absent collocation of specific equipment or functionality, a new entrant could not provide some services or could not serve some customers, then the collocation of such is "necessary" under any conceivable standard.[15]

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that collocation of equipment that materially increases collocation throughput should be deemed "necessary" under Section 251(c)(6).

[14] *See* SBC at 10-11; Covad at 21 ("Congress recognized that competitive LECs must have access to central office space for certain equipment, namely, equipment that competitive LECs use for access to UNEs or for interconnection").

[15] *See also* CompTel at 11-12 ("the ILECs would like the Commission to construe Section 251(c)(6) so narrowly that CLECs cannot use collocation arrangements efficiently to provide competitive local services").

SBC also erroneously contends that "ancillary panels, equipment, and structures" such as cross-connect panels, or other simple frames, routers, portable test equipment, cabinets for spares, or battery distribution fuse bays cannot be collocated. SBC at 15. First, to the extent such "ancillary" equipment permits the collocator to monitor and control its service quality, supply reliable power or to physically interconnect equipment and provide test access, it is "necessary" for interconnection that is equal in quality to what the incumbent provides to itself.[16] Remote test access and monitoring functions are critically important, because they permit the CLEC to (1) detect actual or impending component failures; (2) implement a high level of network utilization; (3) minimize the effect of network overloads; and (4) support a CLEC's national security and emergency preparedness commitments. Without the ability to perform such testing, service quality in the loop could deteriorate. Customers expect high standards of service, and the monitoring and testing of cable and collocated equipment is necessary to make certain that those standards are maintained. In addition, data traffic, which is becoming more and more prevalent, will run only on facilities that are well maintained. Remote test access and monitoring are not simply a convenience or a mere "cost savings" to the CLEC; rather, they are a critical component of operating the transmission and other functions that are collocated in the central office.

3. "Just, Reasonable, and Nondiscriminatory" Terms for Collocation of Equipment That is Necessary for Interconnection or Access to UNEs. The commenters also support AT&T's showing (at 17-18) that the statute clearly prohibits incumbents from imposing

[16] Covad at 21 ("For a DSL providedr like Covad, UNE loops must be accessed at the central office, because DLS services [are provisioned from] that end at the office," resulting in the dual need for DLS providers to avoid the longer loops that would "seriously degrade the variety and quality of service" as well as the need to perform maintenance and testing at the point of interconnection.).

discriminatory terms and conditions on collocation arrangements. In particular, they recognize that any attempt by an incumbent to preclude so-called "multifunctional equipment" that does not consume any more space than "single-use" equipment would be an unjust and discriminatory term and condition of collocation.[17]

Except for Qwest, which supports AT&T and most other commenters, the incumbents barely even mention the explicit statutory requirement that the terms and conditions of collocation be just, reasonable, and nondiscriminatory. SBC makes only the general comment that whether a term or condition is discriminatory can only be determined after the Commission has first established "that a CLEC's equipment is lawfully collocated." SBC at 13. That may be true, but it is irrelevant with respect to multi-use equipment. In each such case, the equipment at issue contains functionalities that are unquestionably "necessary" for either interconnection or access to unbundled network elements, and thus may be collocated. Under those circumstances, any attempt by an incumbent to insist that a CLEC disable other functionalities integrated into the circuitry of that equipment would be blatantly unjust, unreasonable, and discriminatory. This is particularly so where the incumbents or their affiliates are deploying at an unprecedented pace

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[17] *See, e.g.*, Covad at 15 ("limit[ing] the competitive LECs' ability to utilize all functions of multifunctional equipment collocated in a central office" is an unjust, unreasonable, and discriminatory term and condition of collocation); Joint Commenters at 32-34; Focal at 6 ("just and reasonable" provides "further authority to ensure that CLECs have collocation rights that place them on equal footing with the CLECs"); Conectiv at 5-6 (antidiscrimination provisions requiring "just and reasonable" terms apply to "necessary" collocation); Fiber Technologies at 4 (urging application of "just and reasonable" requirement to support broad definition of "necessary"); Supra Technologies at 5 ("just and reasonable" applies to "necessary" in context of collocation); McLeod at 2-3 (nondiscrimination requirement of "just and reasonable" terms must be used to help define "necessary"); RCN a 7 ("necessary" must be defined in light of "just and reasonable" requirement of nondiscriminatory terms); Rhythms at 9 (definition of "necessary for interconnection" must be formed in light of "just and reasonable" nondiscrimination requirements); CTSI at 14 ("just and reasonable" applies to definition of term "necessary").

the very equipment they seek to keep from the CLECs. As Corecomm states, "statutory proscriptions against 'undue' or 'unreasonable' discrimination [like those in Section 251(c)(6)] comprehend *every* form of unreasonable discrimination within the power of Congress to condemn."[18]

Critically, permitting CLECs to make use of such additional functionalities raises no legitimate takings concern. As the commenters note, the only purpose of Section 251(c)(6) is to provide the Commission with the express authority to order physical collocation that the D.C. Circuit found lacking under the original Communications Act in *Bell Atlantic Tel. Cos.* v. *FCC*, 24 F.3d 1441 (D.C. Cir. 1994). As the D.C. Circuit recognized, the 1996 Act "completely revamped the statutory landscape by providing explicit congressional authorization for physical collocation." *GTE Service Corp.*, 205 F.3d at 419. Thus, the Commission indisputably has authority to order collocation of equipment containing functions necessary for interconnection or access to unbundled network elements. If such equipment's circuitry has additional functions integrated within it that do not make additional demands on the incumbent for collocation *space*, the incumbent could not possibly claim that the inclusion of such functions threatens a new or incremental taking is declared to be a taking deserving little or no compensation, the net result will have been a large expenditure of judicial resources on a constitutional claim of little moment. *Loretto* v. *Teleprompter Manhattan CATV Corp.*, 458 U.S. 419 (1982). Therefore, any

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[18] *See* Corecomm at 14-15 (citing cases); *see also* Covad at 16 & 22 (not only does the Commission have clear and distinct authority to enforce the antidiscrimination clauses of Section 251, but it has general discretion and power separately to "utilize its section 201 authority to help drive swift implementation of [its] collocation rules," and has itself recongized as well as ancillary authority to enforce discriminatory practices by carriers subject to similar restrictions under tariffing rules and agreements long before the 1996 Act.").

attempt to preclude collocation of such functions could only be for unlawful discriminatory purposes.

SBC claims briefly in a footnote that multi-use equipment may in fact consume more space, and concocts a single example to support its position. However, its argument fails for two reasons. SBC at 12 n.10. First, SBC's claim that multi-use equipment is often heavier and uses more power and heating, ventilation, and air conditioning ("HVAC") is unsupported and simply incorrect. Central offices are generally constructed with sufficient power, HVAC, and floor loading parameters to supply a completely full central office, and additional power and HVAC would rarely be required to accommodate multi-use equipment. *See, e.g.*, Cisco at 7; *cf.* Rhythms at 57.

Second, SBC's example is an apples-to-watermelons comparison. The SLC Series 5 is a DLC that is capable of supporting a maximum of 192 lines. The Extended Switching Module ("EXM"), by contrast, operates as a full-featured, stand-alone remote switch that can serve up to *20,000 lines*. A CLEC would be much more likely to collocate a smaller remote switch module that would serve 2000-4000 lines, and therefore a much more fair comparison would be between the smaller RSM and the multiple DLCs that it would replace. As AT&T showed in its comments, depending on the footprint served, such an RSM could actually be *smaller* (*i.e.*, consume less floor space) than the multiple DLCs it is replacing (and in all events would easily fit within a standard collocation cage). *See* AT&T at 25-26.

Moreover, against that single example, the comments provide extensive evidence for the Commission's findings that today's integrated multi-use equipment is generally smaller

than older single-use equipment.[19] Indeed, the Commission itself has previously found that technological advances are enabling equipment vendors increasingly to make equipment that integrates many functions, including, for example, the ability to integrate transmission functions (such as multiplexing) with packet switching or other advanced service functions. As Cisco explains (at 7), "advances in computer processors and miniaturization have allowed manufacturers to design and build increasingly intelligent boxes that perform more functions but take up no more space and consume less power than did their less advanced predecessors."[20] Indeed, Tachion shows that "advances in integration and processing capabilities" have allowed it to create a product "that combines switching, routing, transport, digital access cross connect

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[19] *See, e.g., Collocation Order* ¶ 31 (finding a "technological trend towards integrated telecommunications equipment" and citing record support); *see also Local Competition Order* ¶ 581 ("[w]e recognize, however, that modern technology has tended to blur the line between switching equipment and multiplexing equipment").

[20] *See also* Nortel at 5 ("[S]ingle-function (interconnection only) products are unlikely to be physically smaller or consume less power than equipment that includes additional functionality . . ."); Qwest at 11 ("[T]here is no reason to conclude that newer equipment with multiple functions will require more space than older, single-function equipment . . ."); Supra Telecom at 10 ("Such multi-feature equipment may, in fact, be cheaper and smaller than older, single functional equipment."); Supra Telecom at 14-15 (providing specific examples demonstrating that multi-function equipment CLEC seeks to collocate is smaller than prior single function equipment); Corecomm at 27 ("In 1996, for example, a typical Class 5 required hundreds of feet of floor space in a separate room, while today several modern routers or multiplexers can fit comfortably within the space of a typical 10 x 10 collocation cage."); Corecomm at 28-29 ("At the same time, however, allowing collocation of multifunction and stand-alone telecommunications equipment would increase the occupation of ILEC central offices marginally, if at all."); Focal at 13 (because manufacturers have been able to substantially decrease the size of such equipment, DSLAMs, ATM multiplexers and remote switching modules are all able to fit within the collocation space allocated to the CLECs."); Focal at 14 (Multifunctional equipment "permits carriers to perform multiple tasks with one piece of technology that is smaller in size so it can easily be placed in CLEC rented collocation space."); Tachion at 3 ("The enormous cost and space benefits of this fully integrated design will help CLECs and other carriers to roll out service rapidly to new cities and to minimize their costs for equipment, real estate, including collocation space, and for environmental requirements."); Rhythms at 14 ("[O]lder equipment with fewer functions may well require the same, if not more, space than its more efficient multi-functioned counterparts.") Covad at 25 ("Rack-mountable

system ("DACS"), signaling, and service creation functionality in a single standard central office rack." Tachion at 2.

Of course, incumbents could reasonably limit additional functionalities to telecommunications functions. As the Joint Commenters note, however, virtually all of the multifunctional equipment that has been the subject of disputes between ILECs and CLECs involve *only* telecommunications functions that are integrated with the transmission and switching functions that are indisputably "necessary" for interconnection or access to unbundled network elements.[21] Joint Commenters at 31 ("Notably, the 'additional' functionalities being described herein are those the CLEC would have no reason to utilize if the equipment were not also being used for interconnection with the ILEC network or access to UNEs"); *see also* Qwest at 5 ("it is not our intention to support a rule which would permit a combination multiplexer and microwave oven that could be placed in collocation space and used to cook breakfast"). Indeed, as AT&T (at 63-65) showed and as many commenters agree, forcing CLECs to disable certain integrated functions would be a costly and burdensome process that would thwart competitive entry.[22]

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equipment" is *by definition* built according to "an objective standard" that is prevalent in the industry, it "simply doesn't take up excessive space" as the ILECs incorrectly contend).

[21] *See infra* at 26-28.

[22] *See, e.g.*, Connectiv at 8-9 ("[a]rtificially 'dis-integrating' technology or forcing new carriers not to use available functionality in collocated products would create an enormous barrier to competition by CLECs"); Supra Telecom at 10-11 (absent ability "to collocate multi-function equipment, CLECs would have to purchase and [could be forced] install new equipment each time they were permitted to provide additional services."); Joint Commenters at 30; ATG at 4 ("If the Commission were to limit the ability of CLECs to collocate next generation equipment that perform multiple functions, the Commission would be freezing the development of telecommunications technology and ensuring that CLECs will not be able to take advantage of further efficiencies that currently remain in the development stages.").

Finally, Verizon's claim that equipment vendors would rush to offer single-use equipment in response to the "demand" for such equipment that would be created by a Commission rule prohibiting multi-use equipment is surely incorrect. As Nortel explains (at 5), such a rule would have the opposite effect, because "[s]uch restrictions would likely require increased research and development efforts because of the loss of potential economies of scope in order to design additional products or product variants." Thus, contrary to Verizon's claim, restricting CLECs to single-use equipment would so increase their costs and negatively impact their competitiveness that CLEC demand for collocated equipment would dramatically decrease, which in turn would further reduce the vendors' incentives to develop such equipment in the first place. *See, e.g,* Cisco at 10-11. If anything, Verizon's claim is simply a candid admission that the incumbents seek nothing less than the Commission's intervention in the development of technology in the equipment market in a way that systematically favors the incumbents.

C. Under These Standards, The Commission Has Ample Authority To Require Collocation Of Transmission, Switching and Surveillance Functionalities.

The commenters also overwhelmingly support the adoption of national rules specifying that incumbents must permit competitive LECs to collocate equipment that performs both transmission and switching functionalities, along with the associated surveillance functionality. Indeed, the commenters have provided extensive evidence that transmission and switching functionalities are in fact "necessary" for interconnection and access to unbundled network elements. Moreover, because of the incumbent LECs' incentive and ability to use changing technology to delay and impede competition, AT&T supports the many commenters that urge the Commission to establish a rebuttable presumption that any equipment providing

such functionalities is necessary for interconnection and access to network elements and therefore may be collocated by CLECs.[23]

The commenters also broadly support national rules that, consistent with Commission precedent, base the presumptions relating to collocation on the *functionalities* to be collocated, rather than on the names of specific types of equipment. As Focal correctly states (at 9), "[t]he Commission should not tie the definition of 'necessary' to equipment in use today," because "the Commission's definition of 'necessary' must be able to be applied to changing technology." Moreover, as Cisco points out (at 5), "[a]ny regulatory system that does not take such changes into account is destined to stifle innovation and severely hamper entry by new competitors by consigning them to antiquated level of technology."[24] Therefore, to avoid

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[23] *See, e.g.*, CompTel at 5 (rebuttable presumption); Rhythms at 12-13 (Commission's "inquiry must focus first on the functions that CLECs must have at the ILEC premises for interconnection and access to unbundled network elements."); Covad at 24 (The solution ultimately adopted "must be crafted so as to prevent ILECs from engaging in wasteful and costly case-by-case litigation" that currently hampers competition.).

[24] *See also* Qwest at 5-6 ("[t]he Commission should not try to anticipate every circumstance which may arise in the future; if technology or the market evolves in such a way that problems arise under the existing collocation rules, the Commission should revisit . . ."); Intraspan at 6-7 (retrospectively-fixed definition "cannot hope to anticipate the likely innovations and evolutions as we move to a fully digital communications network."); Covad at 23 (noting ILECs' opportunity to "engage in endless, case-by-case litigation of the 'capabilities' or 'use' of a particular piece of equipment in every state and over virtually every product model number."); Focal at 11 (Because "[m]any CLECs have different network design and topology than the ILECs," they "may require different types of equipment collocated in the ILEC premises," and consequently the rule should focus on functionalities and equipment CLECs need to compete); ATG at 5 ("[A]s the Commission reviews the record in this proceeding, it should remain sensitive to the need for adopting rules that will permit CLECs to take full advantage of impeding advances in telecommunications technology so that they may more efficiently provide competitive telecommunications services."); Sprint at 5 ("[H]ow tenuous the various functions of a piece of multifunction equipment are to interconnection and UNE access may change in ways that no one can fully appreciate today."); Sprint at 7 (advocating that Commission not "engage in definitional exercises" that "will shortly be rendered obsolete by technological change").

inevitable disputes in this area, the Commission's rules should focus on the collocation of functionalities rather than specific types of equipment.

1. Transmission Functions. There is overwhelming agreement that transmission functionalities, including all types of multiplexing equipment, can be collocated under the statute. Even Verizon concedes (at 7) that the statute requires it to permit collocation of "multiplexers, concentration devices and [DSLAMs]."[25] As AT&T showed (at 27-30), the Commission has always regarded such functions as subject to collocation, and no commenter seriously disputes that Sections 251(c)(6) requires collocation of such transmission functions.[26]

Absent collocation of such equipment, competitive entry would simply be impossible. As AT&T showed (at 3, 18-21), equipment performing transmission functions is

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[25] *See also* Joint Commenters at 28-29. As the commenters have repeatedly demonstrated, incumbents have sharply escalated their deployment of multi-function and next-generation advanced services equipment so rapidly that many incumbents predict that DSL penetration rates will increase from approximately 10% at the passage of the 1996 Act to over 80% within the next two to three years. Depriving CLECs of the ability to compete in the first several years of mass-deployment by incumbents would doom CLECs to a perpetual disadvantage and allow ILECs to seize increased monopoly power in the interim. *See, e.g.*, Rhythms at 10-11 (due to "the ever changing nature of the network, constant evolution and consolidation of equipment to increase functionality and efficiency, and the burgeoning service innovations offered by providers, it is impossible to construct a comprehensive or static list of equipment necessary for interconnection and access to UNEs").

[26] SBC contends (at 14-15) that the Commission's recent order regarding Project Pronto provides that optical concentration devices are not "necessary" under the statute. SBC misreads the order. The Commission made clear that it was not making any findings in the Project Pronto order that would prejudge the collocation remand proceeding. *Second Memorandum Opinion and Order*, In The Matter Of Ameritech Corp., Transferor And SBC Communications, Inc., Transferee For Consent to Transfer Control of Corporations Holding Commission Licenses and Lines Pursuant to Sections 214 and 310(d) of the Communications Act and Parts 5, 22, 24, 25, 63, 90, 95, and 101 of the Commission's Rules, CC Docket No. 98-141, FCC 00-336 (rel. Sept. 8, 2000), ¶ 9 (emphasis added). It merely stated that OCDs "*may* not be strictly necessary for interconnection or access to unbundled network elements." *Id.* ¶ 36 (emphasis added). However, in a corresponding footnote, the Commission recognized that this was an open issue and that it had "initiated a rulemaking to consider this and related issues." *Id.* n.104 (internal citation omitted).

"necessary," under any definition of that term, for interconnection or access to unbundled network elements, because the only available alternative to collocating such equipment would be to deploy interoffice transport facilities that would be prohibitively expensive. Incumbent LECs typically deliver unbundled loops to the new entrant's collocation cage at low transmission rates, usually in an electrical, analog format. Thus, CLECs must employ a number of transmission functions, including termination, concentration, multiplexing, and signal conversion in order to interconnect the ILEC's facilities with the high capacity optical interoffice transport facilities CLECs must use to operate efficiently and competitively. Indeed, numerous commenters recognize that, absent collocation of such functions, CLECs would literally have to rely on copper pairs for interoffice transport, which would preclude entry.[27]

Transmission functions are also "necessary" for "interconnection" or "access" to unbundled network elements. As many commenters note, CLECs would be precluded from using the features, functions, and capabilities of the unbundled loop that permit DSL services if the could not collocate DSLAMs in the central office. Thus, Covad (at 21) shows that "[f]or a DSL provider like Covad," collocation is necessary "because if [access to the UNE loop] were to take place [outside the central office], the copper loops would have to be extended and more complex and technically limiting cross-connects and interconnection would be necessary," which

[27] *See, e.g,* Corecomm at 28 (absent collocation, "CLEC would have to run lines from the ILEC Central Office to its own switch site at considerable cost"); Tachion at 5 ("it is plain that equipment should be deemed 'necessary' for interconnection to the network and access to unbundled network elecments in any case where the CLEC would otherwise incur the costs of avoidable backhaul, because in such instances the barrier to competition would inevitably be high"); CompTel at 4 ("[t]he costs of establishing separate nodes would force the CLEC to ramp up services more slowly, limit geographic coverage, or raise retail rates," and "[i]n some cases it would be forced to abandon or severely limit its use of additional functionalities . . ."); Connectiv at 17; RCN at 14.

"would seriously degrade the variety and quality of service that Covad could offer. It's as simple as that."[28]

2. Switching Functionality. The commenters, including Qwest, also broadly support a rule requiring collocation of switching functionality. The incumbents, however, are largely silent on switching, with the exception of SBC, which simply states in a single paragraph that the Commission has previously said stand-alone switching equipment cannot be collocated. SBC at 14. This cursory claim does nothing to undermine the extensive factual showings made by AT&T and others that switching functionality is in fact "necessary" for interconnection and access to unbundled network elements.[29]

First, packet switching functionality is "necessary" for interconnection and access to unbundled network elements. As AT&T showed (at 27-30), packet switches perform a number of critical *transmission* functions that enable a carrier to optimize its use of transport media. Packet switches process communications that have been structured as small cells, each of which contains "header" information that allows the switch to determine the destination of the packet. Because this information is available for each packet, and because end-to-end paths are

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[28] *See also* Joint Commenters at 30-31 (unless DSLAM is close to the unbundled loop, "[i]n most instances this will require collocation or the CLEC will have to construct its own loop facilities"); Joint Commenters at 30 ("[A]s the Commission recognizes," a CLEC's "DSLAM cannot be located beyond a certain distance from the end user and the equipment must have direct access to the copper loop."); *see also UNE Remand Order* ¶ 313.

[29] In all events, as Corecomm points out (at 22-23), the Commission "has never found – based upon record evidence – that switches do not perform interconnection or network access functions." Indeed, as Covad notes (at 23-24), the Commission's earlier statements with respect to switching are largely the product of "historical accident, a relic of the *Expanded Interconnection* docket where the Commission was explicitly not promoting the deployment of competitive, switched local services." Moreover, when the Commission made those statements, switch technology was at an entirely different stage of development, and equipment containing switch functionality was typically very large.

software defined, the packet switch efficiently can place customer communications on a conductor based upon the nature and extent of demand for the use of a particular facility at any particular time. For these reasons, packet switches increase the efficiency of the carrier's transmission facilities based upon the way they intelligently multiplex communications onto the available capacity in those facilities.

Packet switch functionality thus facilitates a dramatic increase in the efficiency of a carrier's transmission bandwidth by integrating route selection functionality and the multiplexing technique known as statistical multiplexing. Indeed, it is increasingly the case that advances in transmission functionality (such as statistical multiplexing) cannot be deployed in isolation, but can be used *only* in conjunction with packet switch functionality. As Cisco explains (at 7), "manufacturers and service providers have favored multifunctional equipment [-- *e.g.*, transmission combined with packet switch functions – precisely because it offers capabilities that are most efficiently and effectively performed as an integrated set of functions," and as a result "most if not all of the functionalities being built into multifunctional equipment available today" in fact satisfy the "necessary" standard under Section 251(c)(6). Therefore, collocation of packet switch functions is "necessary" to make use of transmission functions that are indisputably necessary for interconnection and access to unbundled network elements.[30]

[30] *See* Qwest at 13 (future technology integrates functions, which "makes the network more efficient by pushing the optical-type architecture outward on the network and saving transport costs by avoiding the need to backhaul traffic to Qwestlink sites"); Covad at 23 ("by distributing switching capability and functions to the periphery of the network, . . . transport bandwidth would be maximized"; switching, routing, multiplexing are distinctions without a difference); Corecomm at 23-24 ("[a]s the contemporary telecommunications market is increasingly characterized by packetized data traffic, there is no meaningful distinction between interconnection and switching functions").